

FIG. 1

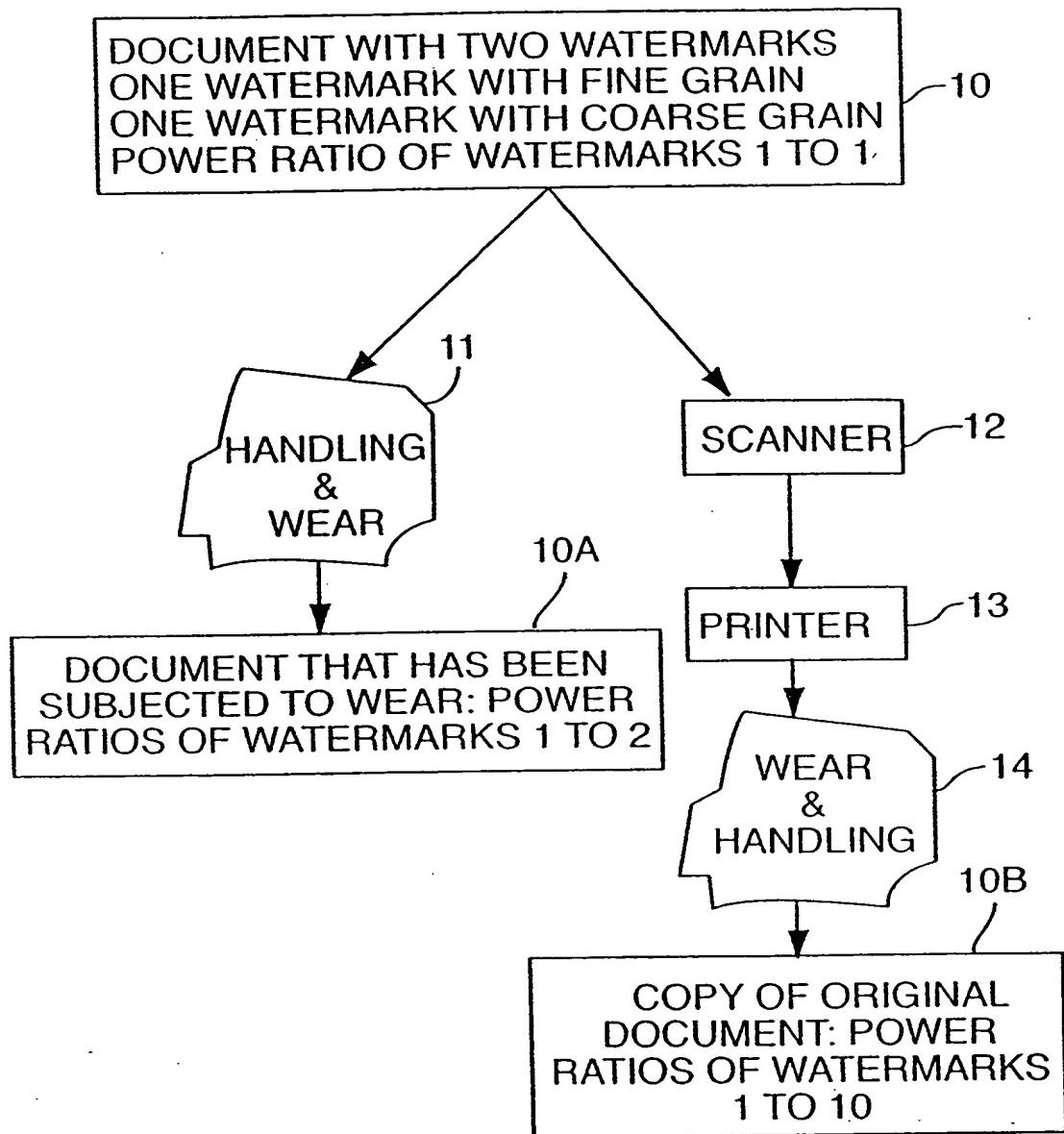


FIG. 2A

# WATERMARK WITH A FINE GRAIN (EACH BLOCK OF PIXELS IS 3X3)

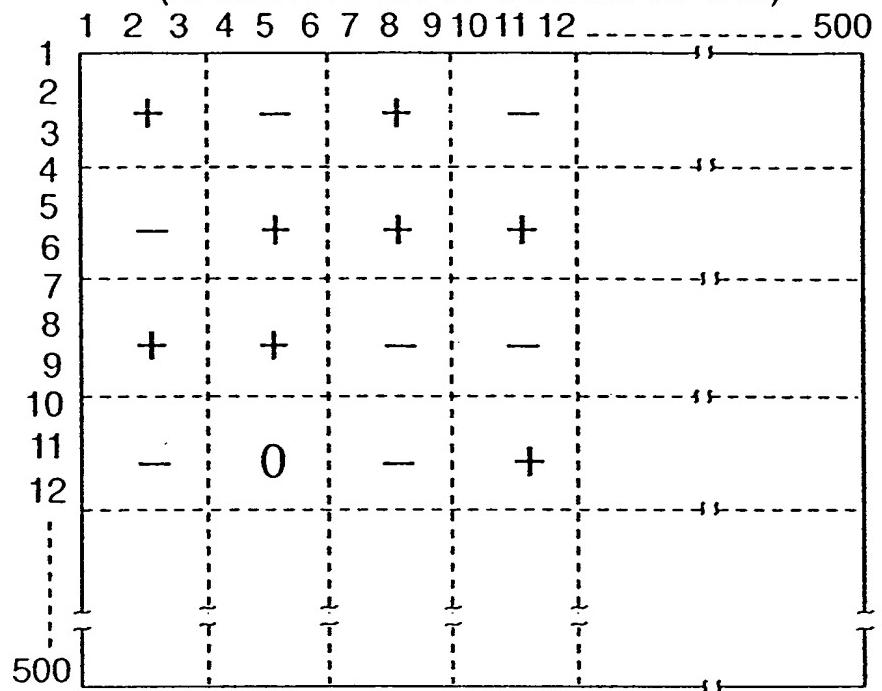
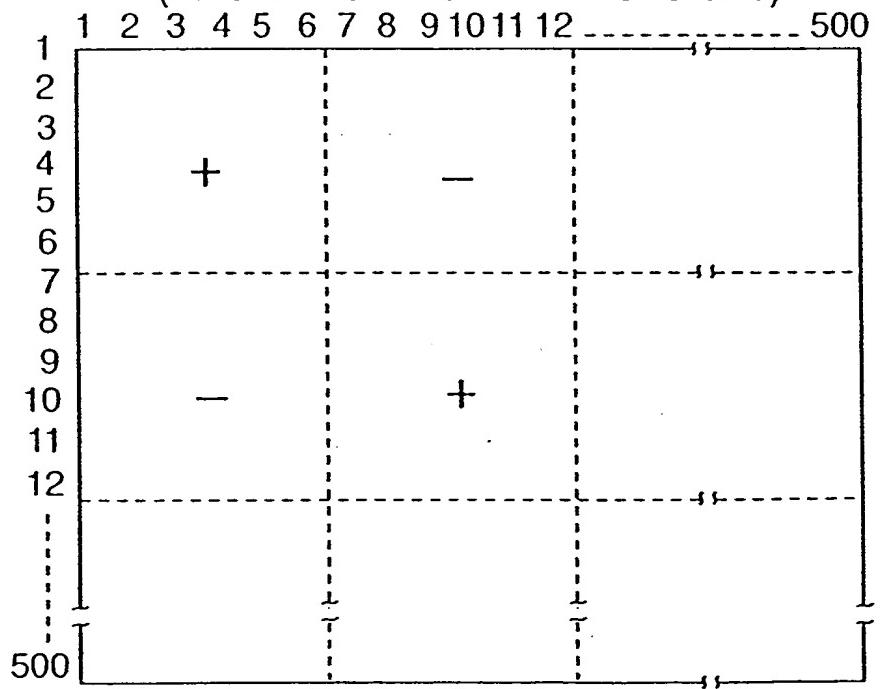
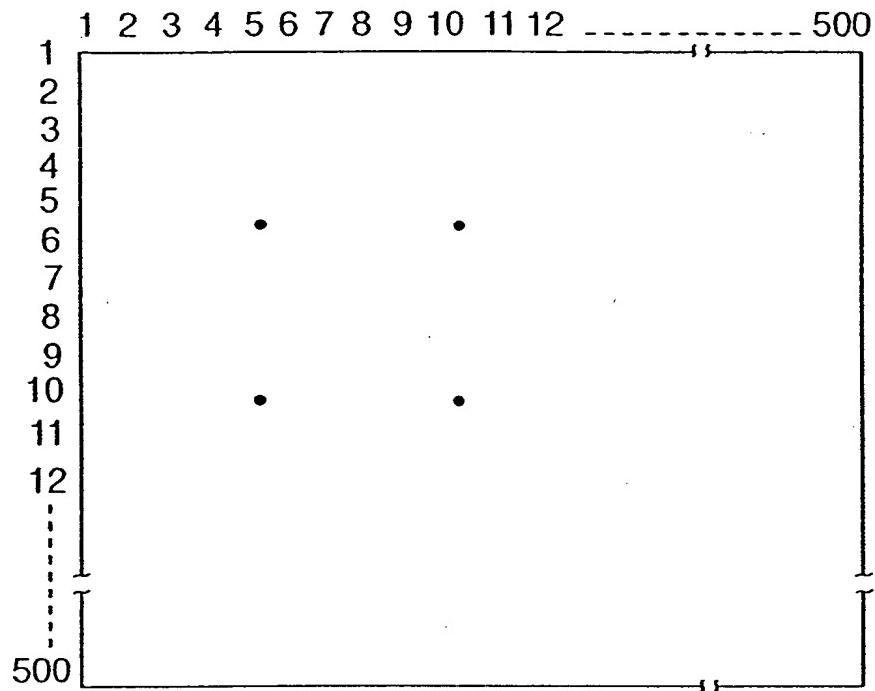


FIG. 2B

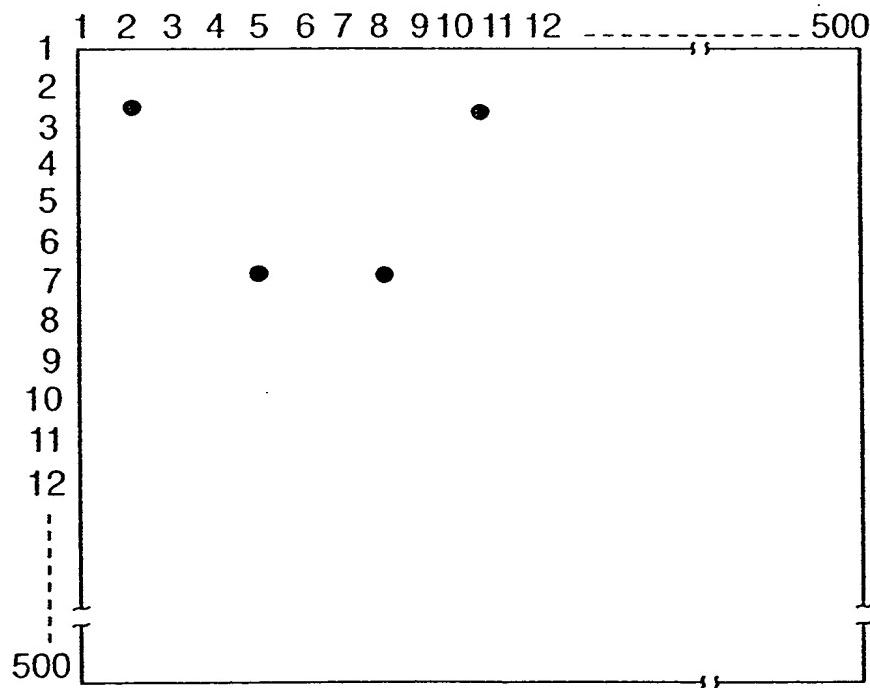
# WATERMARK WITH A COARSE GRAIN (EACH BLOCK OF PIXELS IS 6X6)



**FIG. 3A** GEOMETRICALLY LINEAR ASSIGNMENT  
OF PIXELS TO EACH BIT

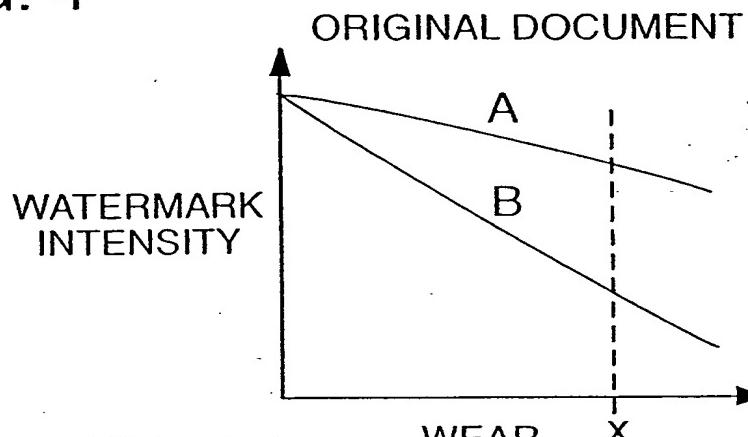


**FIG. 3B** GEOMETRICALLY RANDOM ASSIGNMENT  
OF PIXELS TO EACH BIT

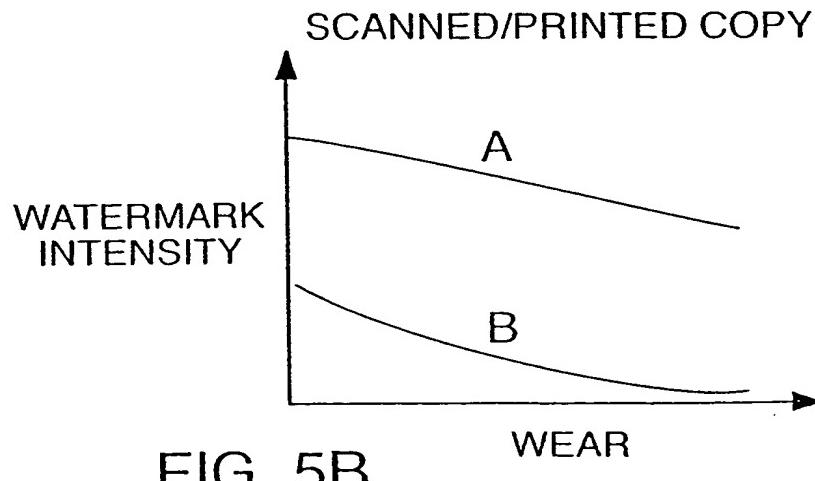


- (1)  $\text{RGB} \rightarrow \text{HSI}$
- (2) FIRST WATERMARK  
 $\text{HSI} + \text{WMI} \Delta \xrightarrow{T} \text{RGB1}$
- (3) SECOND WATERMARK  
 $\text{HSI} + \text{BIASED WM2} \Delta \rightarrow \text{RGB2}$
- (4) FINAL IMAGE  $(\text{RGB1} + \text{RGB2}) / 2 = \text{RGBF}$

**FIG. 4**



**FIG. 5A**



**FIG. 5B**